CLAIMS

What is claimed is:

1. A method of recycling spent chemical species from a chemical laser system having a source of molecular oxygen, potassium hydroxide, molecular chlorine, and hydrogen peroxide, operably coupled to a laser cavity, the method comprising:

reacting at least one of the molecular oxygen, the potassium hydroxide, the molecular chlorine, and the hydrogen peroxide, to produce spent basic hydrogen peroxide;

collecting an amount of the spent basic hydrogen peroxide which contains aqueous potassium chloride;

converting the aqueous potassium chloride into water, molecular hydrogen, molecular chlorine, and aqueous potassium hydroxide;

combining the water and molecular hydrogen with an amount of molecular oxygen from the molecular oxygen source to form aqueous hydrogen peroxide; and

mixing the aqueous hydrogen peroxide with the aqueous potassium hydroxide to form a basic hydrogen peroxide.

2. The method of Claim 1 further comprising:

introducing the basic hydrogen peroxide into the basic hydrogen peroxide source.

3. The method of Claim 1 wherein converting the aqueous potassium chloride includes:

using electrolysis to convert the aqueous potassium chloride into water, molecular hydrogen, molecular chlorine, and aqueous potassium hydroxide.

4. The method of Claim 1 further comprising:

using electrogeneration to form the aqueous hydrogen peroxide.

5. The method of Claim 1 further comprising:

powering at least a portion of the system via electrical energy generated from a light source

6. The method of Claim 1 further comprising:

processing the molecular chlorine to remove a substantial amount of any moisture in the molecular chlorine.

7. The method of Claim 6 further comprising:

introducing the molecular chlorine into the molecular chlorine source.

8. The method of Claim 6 further comprising:

utilizing a dryer to remove the moisture from the molecular chlorine.

9. The method of Claim 8 further comprising:

powering the dryer by electrical power generated from a light source.

10. A method for operating a system to produce a chemical oxygen-iodine laser with recycled chemicals, the laser including a source of molecular oxygen, potassium hydroxide, molecular chlorine, and hydrogen peroxide, wherein the system produces spent basic hydrogen peroxide, comprising:

collecting an amount of spent basic hydrogen peroxide containing aqueous potassium chloride;

converting the aqueous potassium chloride into a mixture comprised of water, molecular hydrogen, molecular chlorine, and aqueous potassium hydroxide;

combining the water and the molecular hydrogen with an amount of molecular oxygen from the molecular oxygen source to form aqueous hydrogen peroxide;

removing at least a portion of any moisture in the molecular chlorine; and

mixing the aqueous hydrogen peroxide with the aqueous potassium hydroxide to form a basic hydrogen peroxide.

11. The method of Claim 10 further comprising:

introducing the basic hydrogen peroxide into the basic hydrogen peroxide source.

12. The method of Claim 10 further comprising:

using electrolysis to convert the aqueous potassium chloride into water, molecular hydrogen, molecular chlorine, and aqueous potassium hydroxide.

13. The method of Claim 10 further comprising:

using electrogeneration to form the aqueous hydrogen peroxide.

14. The method of Claim 10 further comprising:

powering at least a portion of the system via electrical energy generated from a light source

15. The method of Claim 10 further comprising:

introducing the molecular chlorine into the molecular chlorine source.

16. The method of Claim 10 wherein removing at least a portion of any moisture includes drying the molecular chlorine.

17. A method for a system to produce a chemical oxygen-iodine laser, the laser including a source of molecular oxygen, potassium hydroxide, molecular chlorine, and basic hydrogen peroxide, wherein the system produces spent basic hydrogen peroxide, comprising:

collecting an amount of the spent basic hydrogen peroxide containing aqueous potassium chloride;

converting the aqueous potassium chloride into water, molecular hydrogen, molecular chlorine, and aqueous potassium hydroxide;

combining the water and the molecular hydrogen with the molecular oxygen from the molecular oxygen source to form aqueous hydrogen peroxide;

removing a substantial portion of any moisture in the molecular chlorine;

introducing the molecular chlorine into the molecular chlorine source;

forming basic hydrogen peroxide by mixing the aqueous hydrogen peroxide with the aqueous potassium hydroxide; and

introducing the formed basic hydrogen peroxide into the basic hydrogen peroxide source.

18. The method of Claim 17 further comprising:

using electrolysis to convert the aqueous potassium chloride into water, molecular hydrogen, molecular chlorine, and aqueous potassium hydroxide.

19. The method of Claim 17 further comprising:

using electrogeneration to form the aqueous hydrogen peroxide.

20. The method of Claim 17 further comprising:

powering at least a portion of the system via electrical energy generated from a light source